Protocol Development Summary

Prairie Falcon Monitoring (Updated 4/12/2010)

Parks where protocol will be implemented: PINN

Justification/Issues being addressed:
Raptors were ranked 18th among all of the potential vital signs evaluated by the SFAN. Raptors have been monitored at Pinnacles National Monument for 20 years, providing crucial data relied upon by park management to balance resource protection and compatible visitor use. The initial monitoring efforts were prompted by several lawsuits being filed when the park attempted to close portions of the High Peaks climbing area to protect nesting prairie falcons and golden eagles. A compromise was forged to avoid litigation that involved the park performing annual monitoring of raptors in the High Peaks and using the results to open up areas for climbing that were free of nesting for that season. Without the annual monitoring efforts, the park would clearly not be able to adequately manage climbing activities, and the same conflicts would resurface as before, quite likely leading to litigation again by the same climbing/access organizations.

The raptor monitoring program has become a very successful model on how to use wildlife monitoring data to better manage visitor use and is the longest running population monitoring program for prairie falcons in the U.S. (Emmons 2005, Rechtin 2002, Steenhof 2005). Long-term trends in the number of territorial pairs and annual productivity of prairie falcons also provide a means to evaluate the overall ecological integrity and sustainability of the rock/cliff ecosystem, and the importance of the park as a regional population source for this species. Recent information indicates that prairie falcons have been declining throughout the state and are being considered for petitioning for listing under federal protection (Fesnock, pers comm., 2006). Recent data from a radio-telemtery study of prairie falcons within PINN have shown that unlike other populations in the western US, falcons inhabiting PINN do not exhibit migratory behavior (Buranek, pers. comm. 2006). Instead, they rely on PINN and surrounding privately-held lands for foraging the entire year and are therefore particularly sensitive to changes in land use surrounding PINN.

Patterns in the number of territorial pairs and nesting success (number of fledged falcons per nest) tracked over the long-term will be compared to other long-term changes in the region including climate, effects of conversion and development of agricultural lands surrounding PINN, and visitor use.

The protocols developed through support by the Inventory and Monitoring Program will enhance the ability of the park to track long-term changes in the prairie falcon population and strengthen the validity of any management actions required to restrict visitor use to protect the falcons. Support from the I&M program will also institutionalize and secure long-term funding for the program.

Monitoring questions to be addressed by the protocol:

1. Are the number of cliff-nesting raptor territories in the highly visited core climbing areas changing over time?
2. Is productivity of cliff-nesting raptors (number of nestlings per nest that reach fledgling stage) changing over time in the core areas?
3. Are the number of cliff-nesting raptor territories in the non-core climbing areas changing over time?
4. Is productivity changing in the non-core areas?
5. How does productivity in the core areas compare to the non-core areas?

While collecting information on trends, information will be gathered to help the park answer the following management-related question:

1. For which areas do climbing advisories need to be established in order to reduce potential disturbance?

If population or productivity trends occur, research could be initiated to address the following question:

1. What is causing changes in the number of territories and/or productivity?

Specific monitoring objectives are:

In order to meet park management objectives to reduce disturbance to nesting raptors and to track population changes over time, this protocol sets forth the following two measurable monitoring objectives:

1. Track changes in prairie falcon occupancy for all historically occupied territories.

2. Track changes in prairie falcon fecundity success as measured by a. number of chicks/nest produced and b. number of chicks/nest fledged in historically occupied territories.

Core areas (Figure 1) are steep, rocky cliff locations at PINN suitable for prairie falcon nesting where climbing impacts could occur based on the presence of historic climbing routes easily accessible to visitors. **Non-core areas** refer to all other areas within PINN suitable for cliff-nesting (see Protocol Glossary for further terminology definitions related to the raptor monitoring program). The core vs. non-core sampling design is detailed further in the Sampling Design section below. GIS locations of the core areas are depicted on a map of PINN (Figure 1).

Objectives 2 and 3 are separated to address potential future budget shortfall. As funding becomes tight, Objective 3 may be dropped from the program but Ojectives 1 and 2 will

continue to be met. If this scenario occurs, it may be possible to solicit funding from time to time that will still allow monitoring to meet Objective 3 by monitoring at a reduced frequency.

Basic Approach:
Raptors have been monitored at the park for 20 years. The focus of protocols is on prairie falcons. Protocols were drafted in the 1990s and have been revised or augmented numerous times. Peer reviews in 2005 have made substantial improvements to this protocol. receiver from peer reviewers. Support for developing a long-term sampling strategy was garnered through the Cooperative Ecosystem Studies Unit (CESU). Annual data collection is required because the information is necessary to determine which climbing areas can be opened for use during that nesting season. Additional protocols may be developed to cover other species including condors.

Sampling Frequency:

Annual

Timing:

January to March – Determine numbers of pairs exhibiting territorial behavior.
March to April – Determine numbers of nests attempted
April to May – Determine numbers of eggs laid/hatched.
May to June – Determine hatching success, pre-and post fledgling survival.
June to July - Write annual report.

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Proposed Development Schedule, Budget, and Expected Interim Products:

YEAR	BUDGET	TASKS/PRODUCTS
FY05 D/I	$21,000	Submit protocol for peer review. Implement monitoring of prairie falcons at PINN. Complete annual report.
FY06 D/I	$26,000	Revise protocol based on peer review. Implement monitoring of prairie falcons at PINN. Complete annual report.
FY07 D/I	$27,300	Implement monitoring of prairie falcons at PINN. Complete annual report.
FY08 D/I	$28,700	Resubmit protocol for peer review (round 2). Implement monitoring of prairie falcons at PINN. Complete annual report.
FY09 I	$30,200	Implement monitoring of prairie falcons at PINN. Complete annual report and perform 5 year trend analyses.
FY10 I	$31,700	Implement monitoring of prairie falcons at PINN. Complete annual report.
FY11 I	$33,200	Implement monitoring of prairie falcons at PINN. Complete annual report.
FY12 I	$34,900	Implement monitoring of prairie falcons at PINN. Complete annual report.
FY13 I	$36,600	Implement monitoring of prairie falcons at PINN. Complete annual report.
FY14 I	$38,500	Implement monitoring of prairie falcons at PINN. Complete annual report and perform 5 year trend analyses.
FY15 I	$40,400	Implement monitoring of prairie falcons at PINN. Complete annual report.

D = Development
I = Implementation

Literature Cited

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Rechtin, J. A. 2002. 1994-2002 Raptor Nesting at Pinnacles National Monument. Unpubl. Rept. DOI, National Park Service, Pinnacles National Monument, Paicines, CA.

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